

Notes - Solutions by Factoring and the Zero Product Property

Z.P.P. \Rightarrow If $(\star)(\circ) = 0$ then $\star = 0$
or $\circ = 0$

Ex 1: $(x-4)(x+6)(2x+1) = 0$ Solve

$$\begin{array}{r} x-4=0 \\ +4 \quad +4 \\ \hline \end{array}$$

$$x=4$$

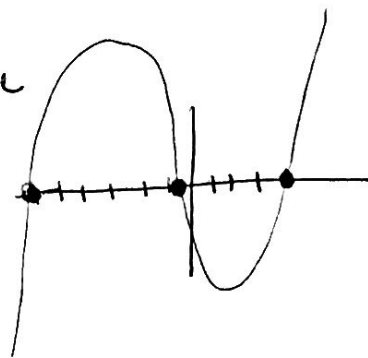
$$\begin{array}{r} x+6=0 \\ -6 \quad -6 \\ \hline \end{array}$$

$$x=-6$$

$$\begin{array}{r} 2x+1=0 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{-1}{2}$$

$$x = -\frac{1}{2}$$



Ex 2: Solve $x^2 + 6x + 8 = 0$

$$\begin{array}{r} * \quad 8 \quad | \quad 6 \\ 2, 4 \quad | \end{array}$$

$$(x+2)(x+4) = 0$$

$$\begin{array}{r} x+2=0 \\ -2 \quad -2 \\ \hline \end{array}$$

$$x=-2$$

$$\begin{array}{r} x+4=0 \\ -4 \quad -4 \\ \hline \end{array}$$

$$x=-4$$

Ex 3: $10x^2 + 5x = 0$

$$5x(2x+1) = 0$$

$$\begin{array}{r} 5x=0 \\ \frac{5}{5} \quad \frac{5}{5} \\ \hline \end{array}$$

$$x=0$$

$$\begin{array}{r} 2x+1=0 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{-1}{2}$$

$$x = -\frac{1}{2}$$

Ex 4: * Make sure the eq = 0 first!

$$\begin{array}{r} x^2 - 7x = 8 \\ -8 \quad -8 \\ \hline \end{array}$$

$$x^2 - 7x - 8 = 0$$

$$\begin{array}{r|l} -8 & -7 \\ \hline -8, 1 & \end{array}$$

$$(x - 8)(x + 1) = 0$$

$$x - 8 = 0$$

$$x + 1 = 0$$

$$x = 8$$

$$x = -1$$